

Hybridize experimental and simulated signals to accelerate the creation of database for virtual training tools of UT operators

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Many companies performing NDT are facing difficulties to train their operators to certify them quickly and efficiently. The trainers must 1/ explain the connection between theory and practice, 2/ show how to proceed, 3/ offer the trainees to practice on several relevant practical cases. This latest point can be difficult to obtain because of shipping costs (i.e., for off-site trainings), block manufacturing costs (i.e., for large blocks) or the lack of existing blocks (i.e., HTHA samples). Different solutions, based on virtual simulators, are now available to supply extensive and educational practical training exercises for UT operators. One of the remaining difficulties is to create the signals database because the number of signals is significant and should consider the skew of the probe to offer a realistic handling. Creating experimental signals database that are, de facto, realistic, but it requires manufacturing the blocks for all the expected flaws. Creating simulated signals database allows generating study cases without manufacturing any block, but could lack of realism (i.e., noise or coupling variations) and be time consuming. EXTENDE has implemented a solution to merge experimental and simulated signals, then accelerate the creation for virtual simulators' database getting the best of both approaches. The proposed example is based on a weld block without flaw. This block is scanned experimentally. Few flaws are then simulated with the NDT modelling software CIVA and merged with the experimental signals. The geometrical echoes are obtained from experimental data, and the transfer function of the flaw interactions is evaluated with simulated data. The resulting signals database has been evaluated with TraiNDE UT; the virtual training simulator developed by EXTENDE.